91-02718/

WATER QUANTITY SURVEYS COST SHARING AGREEMENT

CANADA - NEWFOUNDLAND

ANNUAL REPORT 1989-90

AUGUST 1990

TO: MR. D. G. Jeans
Administrator for Newfoundland

Mr. S. L. Fenety
Administrator for Canada

In accordance with Article XII of the Memorandum of Agreement covering Water Quantity Surveys in the Province of Newfoundland, we submit herewith the annual report for fiscal year 1989-90.

Members of the Coordinating Committee

W. Ullah
Member for Newfoundland
St. John's, Newfoundland

R. D. McBride
Member for Canada
Dartmouth, Nova Scotia

AUGUST 1990

TABLE OF CONTENTS

	PAGE
INTRODUCTION	1
SUMMARY OF ACTIVITIES	2
OPERATIONAL COSTS FOR HYDROMETRIC SURVEYS	5
OPERATIONAL COSTS FOR SEDIMENT SURVEYS	7
MAJOR MAINTENANCE PROJECTS	8
CONSTRUCTION PROGRAM COSTS	9
SUMMARY OF 1989-90 COST AND PAYMENTS RECEIVED	10
TABLES 1-6 GAUGING STATIONS AND SHARABLE COSTS	12
SUMMARY OF ANNUAL COSTS AND PAYMENTS 1975-76 TO 1989-90	14
ANNUAL GRAPHS 1975-76 TO 1989-90	
- OPERATIONAL COSTS OF GAUGING STATIONS	15
- GAUGING STATIONS OPERATED	16
- CONSTRUCTION COSTS	17
COMPARISON OF AVERAGE STATION COST TO NATIONAL COST INDEX	
- ADJUSTMENT OF DATA ON NATINAL COST INDEX AND AVERAGE STATION COST	18
- GRAPH COMPARING AVERAGE STATION COST TO NATIONAL COST INDEX	19
APPENDICES	
I. MEMORANDUM OF AGREEMENT	20
II. SCHEDULE A - WATER QUANTITY SURVEY STATIONS	28
III. NATIONAL GUIDELINES FOR DESIGNATING WATER QUANTITY SURVEY STATIONS	34
IV. SCHEDULE B - ANNUAL PAYMENTS - ITEMS TO BE INCLUDED	40
V. PROCEDURE FOR APPLICATION OF SCHEDULE B TO THE ATLANTIC REGION AGREEMENTS	43
VI. SCHEDULE C - PROCEDURES FOR PREPARATION OF ANNUAL PAYMENTS.	49
VII. SCHEDULE D - SUMMARY OF ANNUAL PAYMENT	51
VIII. MINUTES OF COORDINATING COMMITTEE MEETING	53
IX. ESTIMATED COSTS FOR 1990-91	55

INTRODUCTION

The year ending March 31, 1990 was the fifteenth in which water quantity surveys in Newfoundland were conducted under a Memorandum of Agreement between the Federal and Provincial Governments.

The Agreement establishes the basis on which cooperative water quantity surveys are made. It is administered for Canada by the Regional Director of the Inland Waters Directorate and for Newfoundland by the Assistant Deputy Minister, Department of Environment and Lands. A Co-ordinating Committee comprising the Chief, Water Resources Branch, Inland Waters Directorate, and the Director, Water Resources Division, Department of Environment and Lands, reports to the Administrators. It is the responsibility of the Co-ordinating Committee to prepare annually Schedules A and D for approval by the Administrators.

The Memorandum of Agreement includes four schedules:

1. Schedule A is a list of water quantity stations operated under the terms of the Agreement and their responsibility classification as: federal, federal-provincial or provincial.

2. Schedule B is a list of items that are to be included for cost sharing under the Agreement.

3. Schedule C details procedures for computing annual payments.

4. Schedule D provides a summary of annual payments.

Schedules A and D for 1989-90 are attached to this report in appendicies II and VII.

SUMMARY OF ACTIVITIES

The 1989-90 annual meeting of the Co-ordinating Committee for the Water Quantity Surveys Agreement was scheduled for March 1990. With the new technicians' contract, being ratified and with the potential serious repercussion on all agreements across Canada, it was decided to postpone the meeting until a common federal approach could be developed for presentation to the provinces and territories.

After a number of avenues were explored at the federal level to ease the impact of the unusually large increases in technicians' salaries on the provinces and territories, a set of options were agreed to. In the Atlantic Region an in-depth study took place on the activities of technicians on work outside the agreements on water quantity surveys. These activities included servicing real-time equipment at gauging stations, water quality surveys, maintaining meteorological sensors at gauging stations, and special surveys. The other point of focus was a reassessment of the classification of gauging stations to determine whether the provincial share of increased costs due to the elevated technicians' salaries could be reduced.

For Newfoundland after reviewing all work activities outside the Agreement, a portion of technicians' salaries was deducted to account for these activities in developing the 1990-91 cost estimates. Also, from an assessment of the classification of gauging stations a number of classifications were changed and have been noted on the schedule "A" listing for 1990-91.

Following this, cost estimates for operating the hydrometric and sediment stations for 1990-91 were prepared. For expediency rather than convening a meeting of the Co-ordinating Committee in late May 1990, acceptance on the cost estimates for 1990-91 was reached via telephone communications.

During 1989-90, 97 hydrometric gauging stations were operated, designated as follows, Federal 16, Federal-Provincial 44, Provincial 37. The Province paid $253,392 toward the $488,574 total operational cost of these stations.

A number of maintenance projects were completed, including 6 major projects. Details on these projects are shown on page no.8. At Pipers Hole River, where the old shelter had sustained much damage over the years, a new look-in shelter was installed. The St. Shotts River station was relocated to a site upstream due to severe bank erosion at the old site. In preparation for installation in 1990 materials and parts for a cableway were purchased and flown into the Grey River station. The Junction Brook station was relocated upstream by 300 metre due to the unstable streambed at the old site. At the Southwest Brook station in Terra Nova Park, the stilling well was plumbed and cribbing was installed. At the fly-in station on Northwest Brook the old shelter was replaced with a new look-in shelter.

At the Churchill River water level station between Upper and Lower Muskrat Falls, the shelter was upgraded to a new insulated shelter complete with a propane heater. This work was provided by Newfoundland & Labrador Hydro to ensure data collection during the winter months.

On page no. 5 where actual cost of hydrometric surveys is compared to the original estimates it is noted that a significant variance occurs in salaries due to an increase in overtime because of increased work load and the intermin settlement of the technicians' contract where increases in salary including backpay well exceeded those estimated. Also, with the rather ambitious major maintenance program the estimates for equipment purchased, materials and parts were exceeded. The actual cost helicopter charters for the Island on page no. 5 and in Labrador on page no. 6 were well above the cost estimates because of the elevated charter rates for 1989-90. This all led to a significant increase in total costs for hydrometric surveys on the Island and in Labrador.

The cost shared construction program was limited during 1989-90 with only 3 projects completed. Two stations were established at the request of the Province. On Indian Brook Diversion a new station was constructed by contractor to determine inflow to Grand Lake, while at Corner Brook Lake a station was established by utilizing the intake house of Corner Brook Lake Reservoir, operated by Kruger. Also, since the bridge section down stream of the Salmonier River station was subject to tidal effect, a cableway for highwater measurements was constructed at the station by contractor. Cost details for these projects are shown on page no. 9.

Four sediment stations were operated, designated as follows: Federal-Provincial 2, Provincial 2. The Province paid $5175 toward the $7427 total operational cost of these stations. A PS82 automatic sediment sampler which was previously installed at the Harrys River was moved to the Waterford River at Kilbride station.

The drainage boundary of the Come-By-Chance River station was flown by helicopter in order to answer questions on the drainage area. The drainage area of 43.3km^2 was not changed.

A Bristol Data Collection Platform was installed at the Star Brook station, thus completing the installation at all 14 sites requested by the Province. An arrangement is in place whereby cost recovery in the amount of $11,678 is received from the Province annually as imputed rental.

A special metering project was conducted in 1989 to assess the quality of contributed data by Abitibi-Price on the Exploits River. The results of the survey concluded that the data reported by the company was too low. This lead to further surveys in 1990 to confirm the results.

Three extensive sets of winter measurement data were collected at the stations on the Upper Humber River (Reidville) and Terra Nova River as part of a national collection of data in order to confirm the value of coefficients to account for the effect of ice on the vertical velocity curve.

The Technical Committee for the Humber River Basin Data Collection Network was organized with representatives from the Province, Deer Lake Power and Water Survey of Canada. The purpose of this committee is to ensure that sufficient data exists to effectively manage the basin with regard to power generation and flood control.

In view of the fact that 15 years under the Water Quantity Surveys Agreement in Newfoundland have been completed, it was decided to compare the increases in operational costs under the Agreement to the National consumer cost index. Cost indices (with 1986 base year equal to 100) were obtained from Statistics Canada for each year to 1975. These data were adjusted to a base of 100 for 1975, (see page no. 18). The average costs of operating a hydrometric gauging station for each year over the 15 years was compiled and relatively adjusted, such that the average cost for the first year of the Agreement, 1975-76, was set equal to 100, (see page no. 18). These data were plotted and from the graphic that appears on page no. 19, it can be observed that increases in average station operating cost have not followed the National inflationary trends. Operating costs have been somewhat suppressed over the years which is an indication of the efficient manner of operating the stream gauging network. Since average station operating cost is strongly tied to the salaries of technical staff, then with the upgrading of salaries for 1990-91, it may be expected that average station operating cost will climb.

WATER QUANTITY SURVEYS

PROVINCE OF NEWFOUNDLAND

FOR ISLAND 1989-90

OPERATIONAL COSTS FOR HYDROMETRIC SURVEYS

	Estimated	Actual
Personnel - Basic Pay - 01, 02, 03 (Salaries of hydrometric technicians including overtime - 5.2 Technicians, 1.05 Supervisor)	$209,300	$224,302
Transportation and Communications		
Travel and Removal - 04	22,000	20,826
Transportation and Postage - 06	2,000	26
Telecommunications -07	NIL	814
Professional and Special Services		
Professional Services - 11	1,000	1,330
Other Services - 15	5,000	5,556
Rentals		
Rentals - 16	38,000	42,932
Purchased Repair and Upkeep		
Equipment Purchased and Repairs - 17	2,000	5,942
Building and Structures Repairs - 18	1,000	1,450
Utilities, Materials and Supplies		
Public Utility Services - 19	2,000	1,323
Purchased Materials - 20	18,000	21,118
Parts and Consumable Tools - 21	5,000	13,045
Other Costs - Data Processing	9,900	9,624
- Depreciation of Vehicles (6)	13,500	15,528
- Depreciation of Field Equipment and Instruments	11,000	7,442
TOTAL	$339,700	$371,258

WATER QUANTITY SURVEYS

PROVINCE OF NEWFOUNDLAND

FOR LABRADOR - 1989-90

OPERATIONAL COSTS FOR HYDROMETRIC SURVEYS

Personnel - Basic Pay - 01, 02, 03 (Salaries of hydrometric technicians including overtime - 0.8, technician, 0.2 Supervisor)	$43,200	$44,173
Transportation and Communication		
Travel and Removal - 04	$13,000	$10,995
Transportation and Postage - 06	2,000	1,744
Telecommunications - 07	NIL	47
Professional and Special Services		
Professional Services - 11	NIL	---
Other Purchased Services - 15	3,000	758
Rentals		
Rentals - 16	46,000	52,841
Purchased Repair and Upkeep		
Equipment Purchased and Repairs - 17	500	368
Building and Structure Repairs - 18	NIL	---
Utilities, Materials and Supplies		
Public Utility Services - 19	NIL	---
Purchased Materials - 20	2,000	1,246
Parts and Consumable Tools - 21	1,000	1,034
Other Costs - Data Processing Costs	1,500	1,425
- Depreciation of Field Equipment and Instruments	2,000	2,685
TOTAL	$114,200	$117,316

WATER QUANTITY SURVEYS

PROVINCE OF NEWFOUNDLAND

1989-90

OPERATIONAL COSTS FOR SEDIMENT SURVEYS

Personnel - Basic Pay - 01, 02, 03	NIL	---
Transportation and Communication		
Travel and Removal - 04	$ 500	625
Transportation and Postage - 06	1,000	152
Telecommunications - 07	NIL	---
Professional and Special Services		
Professional Services - 11	1,000	786
Other Purchased Services - 15	100	10
Rentals		
Rentals - 16	NIL	---
Purchased Repair and Upkeep		
Equipment Purchased and Repairs - 17	NIL	185
Building and Structure Repairs - 18	NIL	---
Utilities, Materials and Supplies		
Public Utility Services - 19	NIL	---
Purchased Materials - 20	200	817
Parts and Consumable Tools - 21	100	---
Other Costs - Sample Analysis	3,000	3,680
- Depreciation of Field Equipment and Instruments	1,000	1,172
TOTAL	$ 6,900	$ 7,427

MAJOR MAINTENANCE PROJECTS

NEWFOUNDLAND

1989-90

STATION	PROJECT		COSTS
Pipers Hole River at Mothers Brook	Replace shelter with new look-in shelter	Shelter	$ 450
		Materials	50
		Total	$ 500
St. Shotts River near Trepassey	Relocate station to a site upstream requiring pressure sensing equipment. Install cable carrier	Travel	$ 285
		Contractor	$1,000
		Materials	$ 120
		Total	$1,405
Grey River near Grey River	Purchase of materials and transport to site for 1990 installation	Services	$ 28
		Materials	$ 633
		Total	$ 661
Junction Brook near Badger	Re-locate station	Travel	$ 381
		Service	$ 235
		Rentals	$ 100
		Materials	$ 155
		TOTAL	$ 871
Southwest Brook at Terra Nova National Park	Plumb stilling well and shelter. Install cribbing. Install cable carrier	Travel	$ 370
		Services	$ 479
		Materials	$ 294
		TOTAL	$1,143
Northwest Brook at Northwest Pond	Replace shelter with new look-in shelter	Materials	$ 177
		TOTAL	$ 177

NOTE: All costs associated with the above projects have been included with the operational costs shown on page no. 5.

CONSTRUCTION PROGRAM COSTS

NEWFOUNDLAND

1989-90

STATION NAME	CAPITAL	O&M		TOTAL COST	CLASSIFICATION	PROVINCIAL SHARE
Corner Brook Lake at Intake House	----	Travel	$ 17	$ 33	P	$ 33
		Materials	16			
			$ 33			
Indian Brook Diversion to Birchy Lake	Contractor $15,400	Travel	$ 394	$15,794	P	$15,794
			$ 394			
Salmonier River near Lamaline	Contractor $ 9,600	Travel	$1,244	$10,875	FP	$ 5,437
		Services	31			
			$1,275			
TOTALS	$25,000		$1,702	$26,702		$21,264

WATER QUANTITY SURVEYS

PROVINCE OF NEWFOUNDLAND

SUMMARY OF ANNUAL COSTS AND PAYMENTS RECEIVED - 1989-90

HYDROMETRIC SURVEYS

Island

Station Classification	Stations	Stations Units
F1	4	4.0
F4	8	8.0
FP3	39	39.0
P1	33	30.6*
Totals	84	81.6

Average Cost/Station Unit = $371,258/81.6 = $4,550

Provincial Share = 50% of 39.0 x $4550 + 100% of 30.6 x $4550 = $227,955

Labrador

Station Classification	Stations	Station Units
F2	2	2.0
F4	2	2.0
FP3	5	5.0
P1	4	1.7**
	13	10.7

Average Cost/Station Unit = $117,316/10.7 = $10,964

Provincial Share = 50% of 5.0 x $10,964 + 100% of 1.7 x $10,964 = $46,049

Provincial Share of Operational Costs for Hydrometric Surveys on the Island and Labrador ($227,955 + 46,049) $274,004

Provincial Payment Received for Operational Costs for Hydrometric Surveys per Schedule "D" $253,392

* Includes 2 Deer Lake and 2 Grand Lake WL stations @ 0.4 Station units

** Includes 3 Churchill River WL stations @ 0.4 station units and North Brook seasonal station @ 0.5 station units.

SEDIMENT SURVEYS

Station Distribution	Stations
Federal-Provincial	2
Provincial	2
Total	4

Average Cost/Station = $7,427 = $1,857

Provincial Share of Operational Costs for Sediment Surveys

50% of 2 x $1,875 + 100% of 2 x $1,857	$ 5,571
Provincial Payment Received for Operational Costs for Sediment Surveys per Schedule "D"	$ 5,175

CONSTRUCTION

Total Cost of Constructing 1 New Station and 2 cableways (See Page 9 for details of construction costs) - $26,702

Provincial Share of Construction Costs	$ 21,264
Provincial Payment Received for Construction per Schedule "D"	$ 30,000

DATA COLLECTION PLATFORMS

Annual Imputed Rental for Recovery of Costs from Purchase of 14 DCPs	$ 11,678
Provincial Payment Received for DCPs per Schedule "D"	$ 11,678

TOTALS

Total Provincial Share for Operations, Construction and DCPs ($274,004 + $5,571 + $21,264 + $11,678)	$312,517
Total Provincial Payment Received for Operations, Construction and DCPs per Schedule "D" ($253,392 + $5,175 + $30,000 + $11,678)	$300,245

Province/Territory: NEWFOUNDLAND

TABLE 1
WATER QUANTITY SURVEYS
GAUGING STATION DATA FOR 1989-90

No. of Stations			Changes during 1989-90		Stn. Designation April 1, 89			
April 1 88	April 1 89	Change	Added	Discontinued	Fed.	F P	Prov.	Contrib.
110	111	1	2	1	16 *	44 * (2)	37 * (2)	14

* Bracket Sediment Stations

TABLE 2
WATER QUANTITY SURVEYS
COMPARATIVE GAUGING STATION DATA April 1/75 - April 1/89

Federal Stations			F P Stations			Provincial Stations			Total Stations		
Apr 1 75	Apr 1 /89	Chge	Apr 1 75	Apr 1 /89	Chge	Apr 1 75	Apr 1 /89	Chge	Apr 1/75	Apr 1/ 89	Chge
14	16	2	7	44	37	9	37	28	30	97	67

TABLE 3
WATER QUANTITY SURVEYS
DETAILED GAUGING STATION DATA 1989-90

F-1	F-2	F-3	F-4	Total F	FP-1	FP-2	FP-3	Total F/P	P-1	P-2	Total P	Contributed	Total-All
4	2	0	10	16	0	0	44 (2)	44 (2)	37 (2)	0	37 (2)	14	111 (4)

Bracket Sediment Stations in all catagories.

Province: NEWFOUNDLAND

TABLE 4
WATER QUANTITY SURVEYS
TOTAL PROGRAM COSTS & SHAREABLE COSTS FOR 1989-90
(× $1000)

Total Program Costs					Shareable Costs						
P/Yrs	Sal.	Oper.	Cap.	Total	P/Yrs	Sal.	Oper.	Const.	Total	F Share	P Share
12.4	512.3	254.4	68.9	835.6	7.3	268.5	227.5	26.7	522.7	221.9	300.8

TABLE 5
WATER QUANTITY SURVEYS
SUMMARY OF SCHEDULES D/F - 1989-90

Streamflow & Water Level		Sediment		Total
Operation	Construction	Operation	Construction	
253 392	30 000	5 175	0	288 567

TABLE 6
WATER QUANTITY SURVEYS
COMPARISON - SCHEDULED & ACTUAL COSTS FOR 1989-90
(Dollars)

Salary & Operations		Construction		Total			Annual Payment Received	Received Minus Actual
Sch. D/F	Actual Cost	Sch. D/F	Actual Cost	Sch. D/F	Actual Cost	Difference		
258 567	279 575	30 000	21 264	288 567	300 839	12 272	288 567	-12 272

SUMMARY OF ANNUAL COSTS AND PAYMENTS

1975-76 TO 1989-90

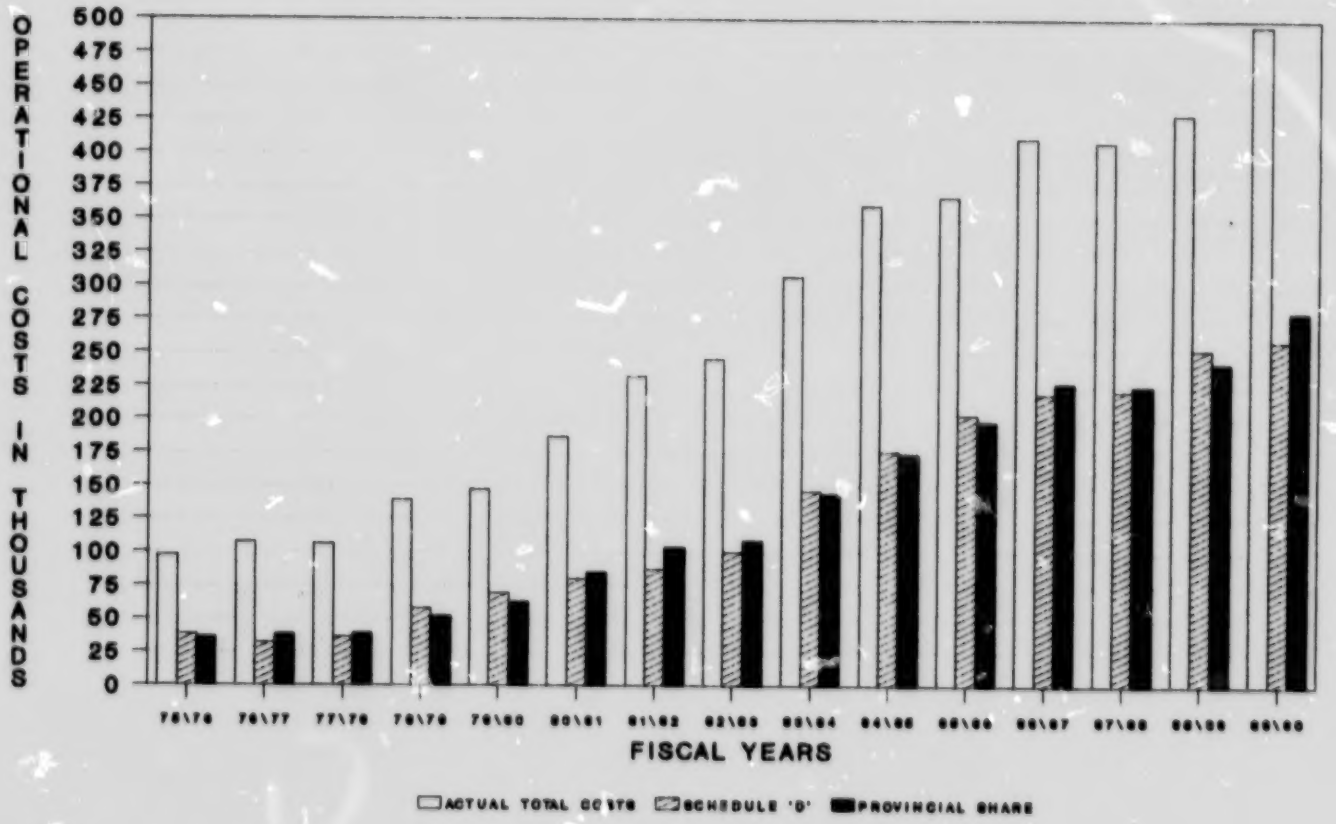
NEWFOUNDLAND

	SCHEDULE "D"				ACTUAL PROVINCIAL SHARE				
YEAR	HYDROMET	SEDIMENT	CONSTR	TOTAL	HYDROMET	SEDIMENT	CONSTR	TOTAL	+CREDIT/DEBIT-
1975-76	37,800	-	3,600	41,400	36,283	-	2,117	38,415	+2,985
1976-77	32,340	-	12,000	44,340	37,840	-	1,573	39,413	+4,927
1977-78	35,520	-	24,480	60,000	38,700	-	13,963	52,663	+7,337
1978-79	56,775	1,400	11,825	70,000	51,371	679	26,000	78,050	+8,050
1979-80	68,338	933	25,729	95,000	62,256	896	22,476	85,628	+9,372
1980-81	78,639	1,475	6,000	86,114	83,518	1,064	7,703	92,285	-6,171
1981-82	83,523	3,750	14,000	101,273	100,726	3,114	16,560	120,400	-19,127
1982-83	96,542	3,744	55,000	155,286	102,735	5,886	47,224	155,845	-559
1983-84	141,457	4,470	38,000	183,927	136,917	6,906	37,864	181,687	+2,240
1984-85	168,244	7,350	52,000	227,594	168,247	5,295	48,662	222,204	+5,390
1985-86	195,563	7,650	36,787	240,000	191,580	6,324	39,203	237,107	+2,893
1986-87	211,706	6,975	34,641	253,322	222,843	4,413	35,136	262,392	-9,070
1987-88	213,634	6,975	42,000	262,609	220,934	3,597	47,957	272,488	9,879
1988-89	245,221	6,300	15,000	266,521	237,249	4,083	16,148	258,080	+8,441
1989-90	253,392	5,175	30,000	288,567*	274,004	5,571	21,264	300,839	-12,272
							NET		-21,543

NOTE: Not including $11,678 payment for IMPUTED RENTAL OF 14 DCPS

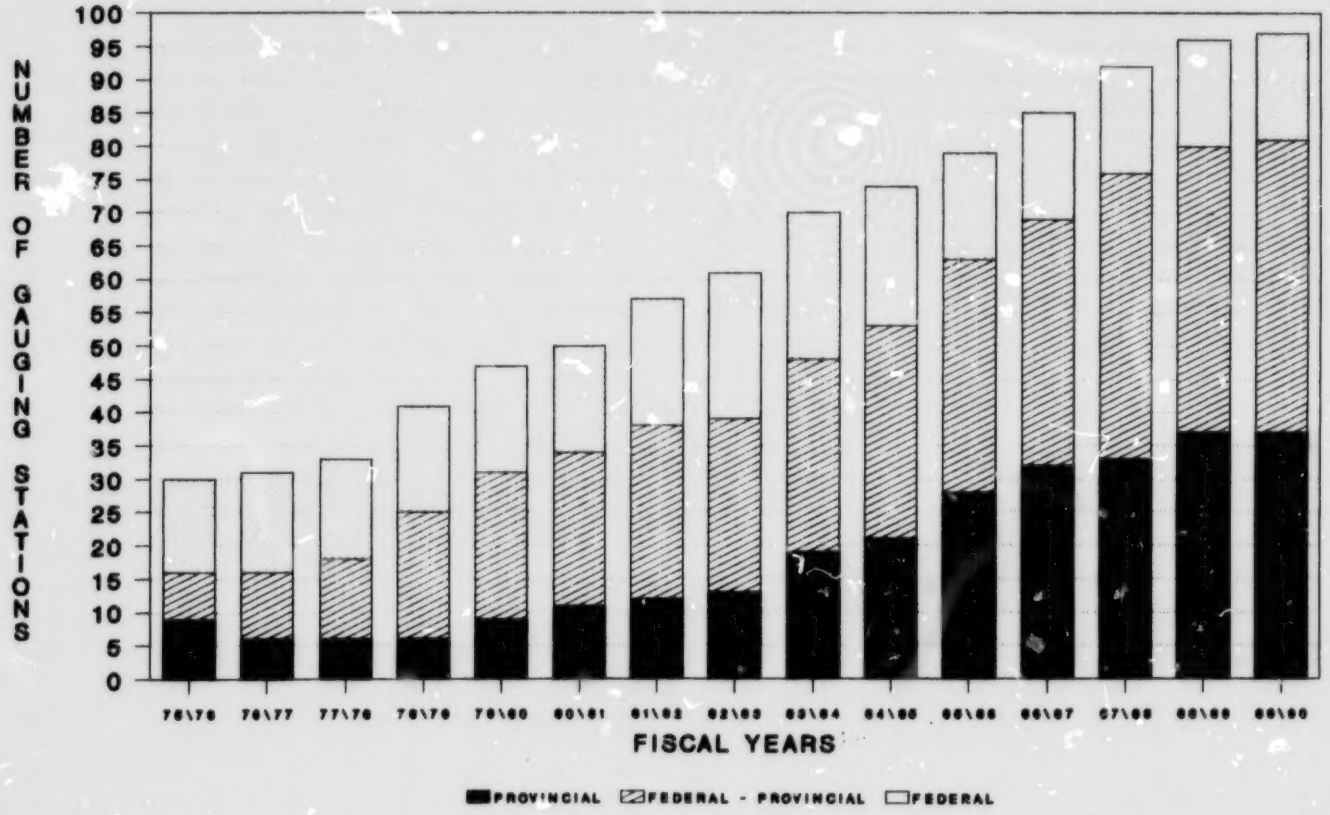
WATER QUANTITY SURVEYS

NEWFOUNDLAND & LABRADOR
OPERATIONAL COSTS



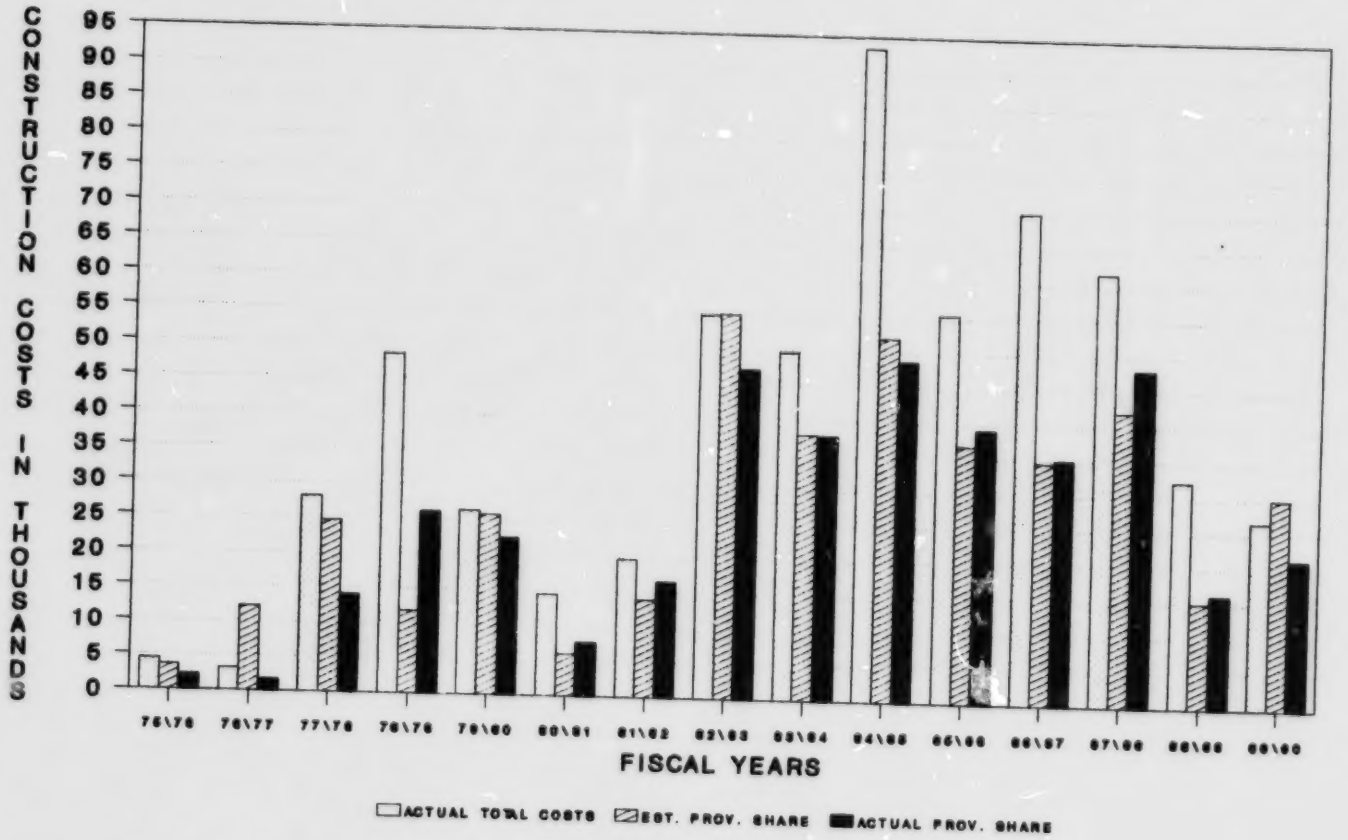
WATER QUANTITY SURVEYS

NEWFOUNDLAND & LABRADOR
GAUGING STATIONS OPERATED



WATER QUANTITY SURVEYS

NEWFOUNDLAND & LABRADOR
CONSTRUCTION COSTS



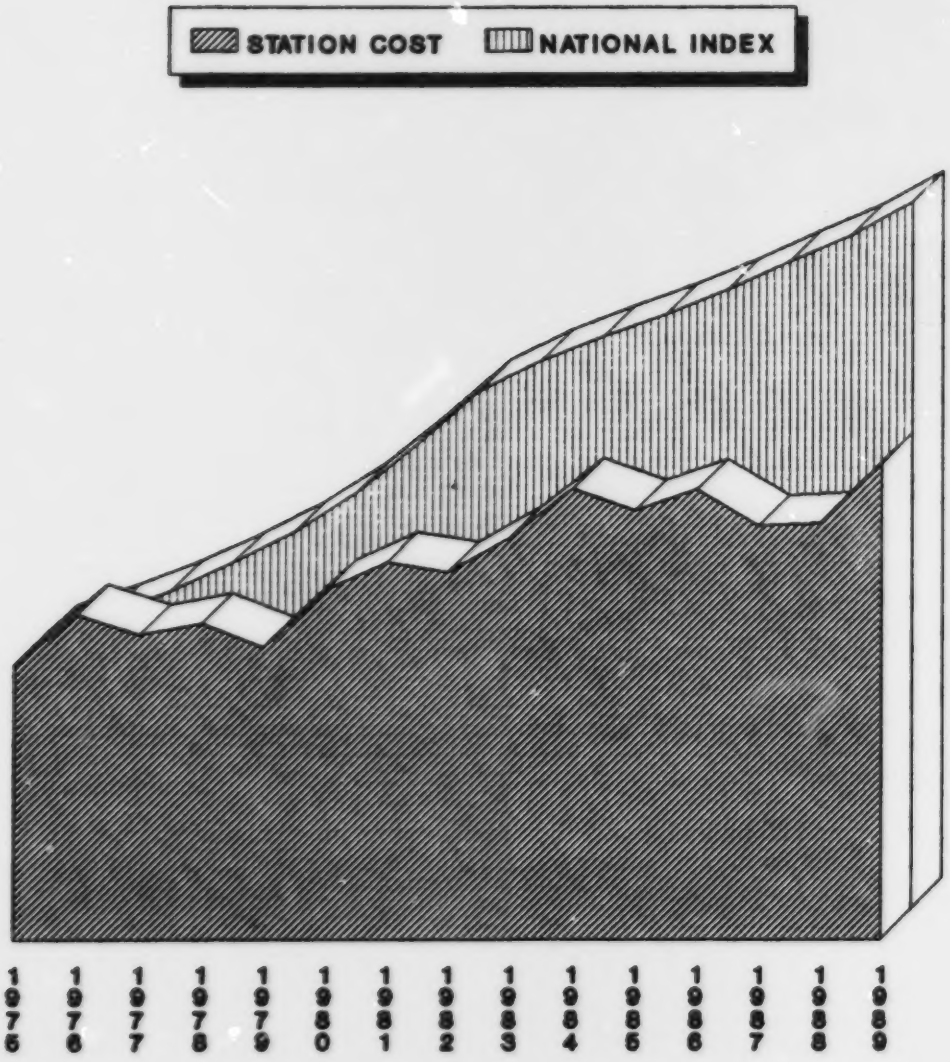
STATISTICS CANADA DATA

	Annual Average Cost Indicator (based on 1986)	Cost Indicator (adjusted to 1975)
1975	44.2	100.0
1976	47.5	107.5
1977	51.3	116.1
1978	55.9	126.5
1979	61.0	138.0
1980	67.2	152.0
1981	75.5	170.8
1982	83.7	189.4
1983	88.5	200.2
1984	92.4	209.0
1985	96.0	217.2
1986	100.0	226.2
1987	104.4	236.2
1988	108.6	245.7
1989	114.0	257.9
1990	119.8(to July 90)	

NEWFOUNDLAND
AVERAGE STATION OPERATING COST

Year	Island		Labrador		All Newfoundland			
	No. Sta.	Cost	No. Sta.	Cost	No. Sta.	Total Cost	Avg. Sta. Cost	Avg. Cost Base 100 1975-76
1975-76	28	NA	2	NA	30	86,969	2,899	100.0
77	29	NA	2	NA	31	106,626	3,440	118.7
78	31	NA	2	NA	33	106,417	3,225	111.2
79	34	90,499	7	46,944	41	137,443	3,352	115.6
80	35	100,166	12	45,284	47	145,450	3,095	106.8
81	38	114,539	12	70,424	50	184,963	3,699	127.6
82	45	150,172	12	77,784	57	227,956	3,999	137.9
83	49	153,407	12	84,111	61	237,518	3,894	134.3
84	58	206,517	12	91,232	70	297,749	4,254	146.7
85	61	237,009	13	115,959	74	352,968	4,770	164.5
86	66	255,524	13	103,366	79	358,890	4,543	156.7
87	72	291,952	13	113,178	85	405,130	4,766	164.4
88	79	293,668	13	109,310	92	402,978	4,380	151.1
89	83	319,534	13	103,521	96	423,055	4,407	152.0
90	84	371,258	13	117,316	97	488,574	5,037	173.7

COST TREND ANALYSIS
STATION COST vs NATIONAL INDEX
NEWFOUNDLAND



APPENDIX NO. I

MEMORANDUM OF AGREEMENT

(Sample only)

MEMORANDUM OF AGREEMENT made this twenty-fifth day of February, 1975,

BETWEEN:

The Government of Canada, hereinafter called "Canada", represented by the Minister of the Environment

OF THE FIRST PART

- and -

The Government of the Province of Newfoundland and Labrador hereinafter called the "Province" represented by the Minister responsible for Provincial Affairs and Environment

OF THE SECOND PART

WHEREAS co-operative water quantity surveys have been carried on for many years under various informal federal-provincial agreements in the Provinces of Canada by the Water Survey of Canada of the Department of the Environment, for the purpose of securing co-ordinated and standardized basic data to facilitate resource planning and management in general and the design and implementation of projects related to navigation, hydro-electric development, irrigation, drainage, flood control, recreation, domestic and industrial water supply and other purposes;

AND WHEREAS the Governor-in-Council has by Order-in-Council NO. PC 1975-1/172 dated January 28, 1975, authorized the Minister of Environment to execute this agreement on behalf of Canada, subject to funds being voted by the Parliament of Canada;

AND WHEREAS the Lieutenant Governor in Council has, by Order-in-Council No. 1412-74 dated December 5, 1974, authorized the Minister responsible for Provincial Affairs and Environment to execute this agreement on behalf of the Province subject to funds being voted by the Legislative Assembly.

NOW THEREFORE this agreement witnesseth that water quantity surveys in the Province and the financing thereof shall be continued and maintained upon the following basis; -

INTRODUCTION

DEFINITIONS

a) ANNUAL PAYMENT - a sum, agreed to by both parties in advance of the fiscal year, which shall represent the costs of operation and construction of water quantity survey stations.

b) CONSTRUCTION - includes the construction of new water quantity survey stations and the maintenance, repair and reconstruction of existing water quantity survey stations.

c) CONSTRUCTION PERSONNEL - includes foremen and labourers on full time duty as well as engineering and technical staff on part time supervisory duty or reconnaissance assignment.

d) FIELD PERSONNEL - includes hydrometric supervisors and field technicians on full time duty as well as engineering and technical staff on temporary assignment.

e) NETWORKS - an original system of gauging stations for collection of water quantity survey data.

f) OPERATING PARTY - either party to this agreement which operates water quantity survey data.

g) PUBLISHED DATA - includes streamflow, water level and sediment data. The data is to be available in publications and computer compatible data files.

h) SEDIMENT STATIONS - any location where surveys are undertaken to collect data on suspended sediment or bed material or bed load data singly or in combination. Water temperature data is to be collected.

i) WATER QUANTITY SURVEY STATIONS - any location where surveys are undertaken to collect streamflow or water level or suspended sediment or bed material or bed load data singly or in combination. Water temperature data may be collected.

OPERATIONAL CONSIDERATIONS

ARTICLE I

Each water quantity survey station presently in operation has been identified according to the designation federal, federal-provincial or provincial. The current designation is given in Schedule A, hereto attached. Schedule A may be revised to include a change in the designation of a station, the addition of new stations or the deletion of stations as agreed by the Co-ordinating Committee (Article XII) and approved by the officials named in Article XIII.

ARTICLE II

Canada will construct and operate and pay the cost of construction and the annual cost of operation of water quantity survey stations which have been designated as federal. Where Canada deems it desirable in the interest of efficiency of operation, the Province may be requested to construct and operate some federal water quantity survey stations. If the Province agrees to such arrangements, Canada would in such cases reimburse the Province for the cost of construction and annual cost of operation in accordance with Article VI.

ARTICLE III

Where Canada constructs and operates water quantity survey stations designated as federal-provincial, the Province will reimburse Canada for 50% of the construction costs and 50% of the annual cost of operation. Where the Province constructs and operates these stations, Canada will reimburse the Province for 50% of the construction costs and 50% of the annual cost of operation in accordance with Article VI.

ARTICLE IV

If requested by the Province, Canada will construct and operate water quantity survey stations designated as provincial provided the Province reimburses Canada for 100% of the construction cost and annual cost of operation. If the Province constructs and operates these stations the Province will assume 100% of the annual cost of construction and operation in accordance with Article VI.

ARTICLE V

a) The operating party shall provide the staff to meet its responsibilities under this agreement.

b) Canada will at its own expense publish data from stations that it operates. Canada will on request at its own expense, publish data from stations operated by the Province providing the data meets national standards.

c) Water quantity surveys under this agreement shall be carried out to national standards in field procedures, equipment and instrumentation, data compilation and will use national guidelines for station designations. Such standards and guidelines shall be developed and maintained by Canada in consultation with all of the Provinces.

d) Canada and the Province shall work together to take advantage of technological advancements which improve the quality of data and the efficiency of standard procedures and to develop methods and techniques to assist in planning water quantity survey networks.

e) Canada at its own expense will provide calibration service for water quantity survey velocity instruments for both parties.

FINANCIAL CONSIDERATIONS

ARTICLE VI

a) Procedures for computing the annual payment are given in Schedule C.

b) The annual payment for 1975-76 is set out in Schedule D. The annual payment for subsequent years shall be determined according to the terms of this agreement and the procedures as set out in Schedule C.

c) Annual operation costs, except for sediment stations, will be computed using average annual water quantity survey station costs and the number of stations to be operated. The average annual water quantity survey station costs shall be recomputed annually according to the items listed in Schedule B.

d) Annual construction costs, except for sediment stations, will be the cost of constructing new water quantity survey stations plus repairs to and major reconstruction of existing water quantity survey stations.

e) The annual operation costs for sediment stations will be the summation of the individual station operation costs.

f) The annual construction costs of sediment stations will be the cost of constructing new sediment stations plus repairs to and major reconstruction of existing stations.

ARTICLE VII

a) The party operating the water quantity survey stations in accordance with Articles II, III and IV, will be responsible for providing and paying the total cost of water level recording equipment.

b) All costs associated with the purchase, installation and operation of specialized water quantity survey equipment will be paid for by the party or parties requiring the service.

ARTICLE VIII

Canada or the Province, depending on the operating responsibilities, shall submit invoices for one-quarter of the annual payment on July 1st., October 1st., January 1st. and March 1st. of each fiscal year in accordance with the annual payment set out in Schedule D. Payment is to be made as soon as possible after receipt of each quarterly claim but in no case later than March 31st. of each year.

ARTICLE IX

Except as agreed by the parties hereto where both parties have an interest, either operational or financial, the annual net change in the total number of water quantity survey stations, including federal, federal-provincial and provincial, as set out in Schedule A, is not to exceed 15% in any year.

ARTICLE X

Each party constructing or operating a water quantity survey station or stations shall keep complete records of all shareable expenditures made pursuant to this agreement and shall support such expenditures with proper documentation. Canada and the Province upon request shall make these records and documents available to auditors appointed by each other.

CO-OPERATION

ARTICLE XI

There shall be a free exchange of water quantity survey data between Canada and the Province. The party operating the water quantity survey station shall retain originals or a microfilm copy of observations, measurements, recorder charts and computations and these are to be available to the the other party on request.

CO-ORDINATION

ARTICLE XII

The officials named in Article XIII shall establish a Co-ordinating Committee representing each of the parties affected by this agreement. The Co-ordinating Committee shall be responsible for:

a) Planning and the continuing review of water quantity survey networks, including addition and deletion of all stations within Provincial boundaries.

b) Determining and reviewing the designation of water quantity survey stations using national guidelines which may from time to time be changed, subject to ratification by Canada and all of the Provinces.

c) Assuring the maintenance of standards in procedures, data compilation and instrumentation.

d) Reviewing annual operating costs and establishing average annual station costs, as per Article VI, for revision of Schedule D.

e) Preparation annually of new Schedule A and D which with the approval of the officials named in Article XIII would apply for the second and each subsequent year of the agreement.

The committee shall meet at least once a year and shall report to the officials named in Article XIII.

ADMINISTRATIVE ARRANGEMENTS

ARTICLE XIII

This agreement is to be administered for Canada by the Regional Director of the Inland Waters Directorate located at Halifax, Nova Scotia, and for the Province by the Assistant Deputy Minister, Environment, located at St. John's, Newfoundland.

IMPLEMENTATION

ARTICLE XIV

The parties hereto agree that water quantity surveys will be carried out at indicated in Article I to XIII inclusive and the Schedules attached hereto.

PERIOD OF AGREEMENT

ARTICLE XV

This agreement shall become effective and binding on the parties upon the first day of April, 1975.

The agreement may be terminated by Canada or the Province on March 31st of any year provided that eighteen (18) months notice in writing is given. The agreement may be revised with the consent of the Governor-in-Council and the Lieutenant Governor-in-Council.

IN WITNESS WHEREOF the Honourable Jeanne Sauve, Minister of Environment has hereunto set her hand on behalf of Canada, and the Honourable W. Gorden Dawe, Minister of Provincial Affairs and Environment has hereunto set his hand on behalf of the Province of Newfoundland and Labrador.

Signed on behalf of Canada)
by the Honourable Jeanne Sauve)
Minister of Environment)....................

IN THE PRESENCE OF)

.....)

Signed on behalf of the Province of)
Newfoundland and Labrador by the)
Honourable W. Gorden Dawe, Minister)
of Provincial Affairs and Environment)....................

IN THE PRESENCE OF)

)
)
.....

APPENDIX II

SCHEDULE A

WATER QUANTITY SURVEY STATIONS

FEDERAL 1 FEDERAL DEPARTMENTAL PROGRAMS

STA. NO.	STATION NAME	ESTAB.	D.A.	RECORDS	REMARKS
02YQ001	GANDER RIVER AT BIG CHUTE	1949	4400	Q R C	DCP TYP
02ZB001	ISLE AUX MORTS RIVER BELOW HIGHWAY BRIDGE	1962	205	Q R C	DCP TYP LRTAP
02ZM006	NORTHEAST POND RIVER AT NORTHEAST POND	1953	3.90	Q R C	
02ZK001	ROCKY RIVER NEAR COLINET	1949	285	Q R C	DCP TYP WQ

FEDERAL 2 INTERPROVINCIAL WATERS

STA. NO.	STATION NAME	ESTAB.	D.A.	RECORDS	REMARKS
02XA003	LITTLE MECATINA RIVER ABOVE LAC FOURMONT	1978	4540	Q R C	DCP RMT
02XA004	RIVIERE JOIR NEAR PROVINCIAL BOUNDARY	1979	2060	Q R C	RMT

FEDERAL 4 NATIONAL WATER QUANTITY INVENTORY

STA. No.	STATION NAME	ESTAB.	D.A.	RECORDS	REMARKS
02ZF001	BAY DU NORD RIVER AT BIG FALLS	1951	1170	Q R C	DCP
03OE001	CHURCHILL RIVER ABOVE UPPER MUSKRAT FALLS	1949	92500	Q R C	DCP RMT REG71
03QC001	EAGLE RIVER ABOVE FALLS	1966	10900	Q R C	DCP RMT WQ TYP
02YO005	EXPLOITS RIVER BELOW STONY BROOK	1969	8640	Q R C	REG WQ
02ZD002	GREY RIVER NEAR GREY RIVER	1969	1340	Q R C	DCP RMT LRTAP
02YJ001	HARRYS RIVER BELOW HIGHWAY BRIDGE	1968	640	Q R C	DCP SED WQ LRTAP
02YL003	HUMBER RIVER AT HUMBER VILLAGE BRIDGE	1982	7860	Q R C	DCP REG
02YD002	NORTHEAST BROOK NEAR RODDICKTON	1980	200	Q R C	SED
02YS003	SOUTHWEST BROOK AT TERRA NOVA NATIONAL PARK	1967	36.7	Q R C	
02YC001	TORRENT RIVER AT BRISTOL'S POOL	1959	624	Q R C	WQ

FEDERAL-PROVINCIAL 3 REGIONAL WATER QUANTITY INVENTORY

STA. NO.	STATION NAME	ESTAB.	D.A.	RECORDS	REMARKS
03QC002	ALEXIS RIVER NEAR PORT HOPE SIMPSON	1978	2310	Q R C	DCP RMT
02YA002	BARTLETTS RIVER NEAR ST. ANTHONY	1986	33.6	Q R C	DCP
02YJ002	BLANCHE BROOK NEAR STEPHENVILLE	1978	120	Q R C	REG
02YH001	BOTTOM CREEK NEAR ROCKY HARBOUR	1985	33.4	Q R C	
02ZH002	COME BY CHANCE RIVER NEAR GOOBIES	1961	43.3	Q R C	
02ZE004	CONNE RIVER AT OUTLET OF CONNE RIVER POND	1988	99.7	Q R C	
02YO011	EXPLOITS RIVER BELOW NOEL PAULS BROOK	1985	6370	Q R C	DCP REG
02ZG001	GARNISH RIVER NEAR GARNISH	1958	205	Q R C	WQ LRTAP
02ZC002	GRANDY BROOK BELOW TOP POND BROOK	1982	230	Q R C	DCP RMT LRTAP
02YO008	GREAT RATTLING BROOK ABOVE TOTE RIVER CONFLUENCE	1984	823	Q R C	DCP
02YE001	GREAVETT BROOK ABOVE PORTLAND CREEK POND	1983	95.7	Q R C	
02ZA002	HIGHLANDS RIVER AT TRANS-CANADA HIGHWAY	1982	72.0	Q R C	SED
02YR003	INDIAN BAY BROOK NEAR NORTHEAST ARM	1981	554	Q R C	
02YM002	INDIAN BROOK AT INDIAN FALLS	1954	974	Q R C	WQ LRTAP REG
02YO010	JUNCTION BROOK NEAR BADGER	1985	61.6	Q R C	
03NG001	KANAIRIKTOK RIVER BELOW SNEGAMOOK LAKE	1977	8930	Q R C	DCP RMT
02YK002	LEWASEECHJEECH BROOK AT LITTLE GRAND LAKE	1952	470	Q R C	DCP RMT
02ZA001	LITTLE BARACHOIS BROOK NEAR ST. GEORGE'S	1978	343	Q R C	
02YG001	MAIN RIVER AT PARADISE POOL	1986	627	Q R C	DCP RMT
02YR001	MIDDLE BROOK NEAR GAMBO	1959	267	Q R C	
03OE003	MINIPI RIVER BELOW MINIPI LAKE	1979	2330	Q R C	DCP RMT
03PB002	NASKAUPI RIVER BELOW NASKAUPI LAKE	1977	4480	Q R C	RMT
02ZK002	NORTHEAST RIVER NEAR PLACENTIA	1979	89.6	Q R C	
02ZN001	NORTHWEST BROOK AT NORTHWEST POND	1966	53.3	Q R C	
02YQ004	NORTHWEST GANDER RIVER NEAR GANDER LAKE	1983	2150	Q R C	RMT
02ZH001	PIPERS HOLE RIVER AT MOTHERS BROOK	1952	764	Q R C	WQ LRTAP
02YR002	RAGGED HARBOUR RIVER NEAR MUSGRAVE HARBOUR	1977	399	Q R C	
02YQ005	SALMON RIVER NEAR GLENWOOD	1987	80.8	Q R C	
02ZG003	SALMONIER RIVER NEAR LAMALINE	1980	115	Q R C	
02ZM009	SEAL COVE BROOK NEAR CAPPAHAYDEN	1979	53.6	Q R C	
02YK005	SHEFFIELD BROOK NEAR TRANS-CANADA HIGHWAY	1972	391	Q R C	DCP
02ZJ001	SOUTHERN BAY RIVER NEAR SOUTHERN BAY	1976	67.4	Q R C	
02YO012	SOUTHWEST BROOK AT LEWISPORTE	1988	47.7	Q R C	
02YQ006	SOUTHWEST GANDER RIVER BELOW LARSON FALLS	1987	531	Q R C	RMT
02ZL003	SPOUT COVE BROOK NEAR SPOUT COVE	1979	10.8	Q R C	
02YN003	STAR BROOK BELOW STAR LAKE	1987	427	Q R C	RMT DCP
02YA001	STE. GENEVIEVE RIVER NEAR FORRESTERS POINT	1969	306	Q R C	
02YS005	TERRA NOVA RIVER AT GLOVERTOWN	1985	2000	Q R C	DCP
02ZG002	TIDES BROOK BELOW FRESHWATER POND	1977	166	Q R C	DCP
03NF001	UGJOKTOK RIVER BELOW HARP LAKE	1978	7570	Q R C	RMT
02YL008	UPPER HUMBER RIVER ABOVE BLACK BROOK	1988	471	Q R C	RMT DCP
02YL001	UPPER HUMBER RIVER NEAR REIDVILLE	1928	2110	Q R C	DCP TYP
02ZM018	VIRGINIA RIVER AT PLEASANTVILLE	1984	10.7	Q R C	
02ZM008	WATERFORD RIVER AT KILBRIDE	1974	52.7	Q R C	SED

PROVINCIAL 1 PROVINCIAL DEPARTMENTAL PROGRAM

STA. NO	STATION NAME	ESTAB.	D.A.	RECORDS	REMARKS
02ZL005	BIG BROOK AT LEAD COVE	1985	11.2	Q R C	
02YK008	BOOT BROOK AT TRANS-CANADA HIGHWAY	1985	20.4	Q R C	
03OE007	CHURCHILL RIVER AT FOOT OF LOWER MUSKRAT FALLS	1980		H R C	REG71 RMT
03OE008	CHURCHILL RIVER AT GRIZZLE RAPIDS	1988		H R C	REG71 RMT
03OE005	CHURCHILL RIVER BETWEEN UPPER AND LOWER MUSKRAT FALLS	1978		H R C	REG71 RMT
02YL007	DEER LAKE AT DEER LAKE	1987		H R C	
02YL006	DEER LAKE NEAR PASADENA	1987		H R C	
02YK007	GLIDE BROOK BELOW GLIDE LAKE	1984	112	Q R C	
02YK009	GRAND LAKE AT MAIN DAM	1988		H R C	DCP
02YK010	GRAND LAKE EAST OF GRAND LAKE BROOK	1988		H R C	DCP RMT
02ZM020	LEARY BROOK AT PRINCE PHILIP DRIVE	1985	17.8	Q R C	
02ZM017	LEARY BROOK AT ST. JOHN'S	1983	15.3	Q R C	
02YO007	LEECH BROOK NEAR GRAND FALLS	1984	88.3	Q R C	
02ZK003	LITTLE BARACHOIS RIVER NEAR PLACENTIA	1983	37.2	Q R C	
02ZG005	LITTLE BARASWAY BROOK NEAR MOLLIERS	1987	28.2	Q R C	
02ZA003	LITTLE CODROY RIVER NEAR DOYLES	1982	139	Q R C	
02ZK004	LITTLE SALMONIER RIVER NEAR NORTH HARBOUR	1983	104	Q R C	
02YN002	LLOYDS RIVER BELOW KING GEORGE IV LAKE	1979	469	Q R C	RMT
02YG002	MIDDLE ARM BROOK BELOW FLATWATER POND	1987	224	Q R C	
02XD002	NORTH BROOK NEAR RED BAY	1984	35.5	Q R C	RMT
02YO006	PETERS RIVER NEAR BOTWOOD	1981	177	Q R C	
02YJ003	PINCHGUT BROOK AT OUTLET OF PINCHGUT LAKE	1986	119	Q R C	
02ZG004	RATTLE BROOK NEAR BOAT HARBOUR	1981	42.7	Q R C	
02YL005	RATTLER BROOK NEAR MCIVERS	1985	17.0	Q R C	
02ZM022	RAYMOND BROOK AT OUTLET OF BAY BULLS BIG POND	1988		Q R C	REG
02ZJ002	SALMON COVE RIVER NEAR CHAMPNEYS	1983	73.6	Q R C	
02ZL004	SHEARSTOWN BROOK AT SHEARSTOWN	1983	28.9	Q R C	
02YP001	SHOAL ARM BROOK NEAR BADGER BAY	1982	63.8	Q R C	RMT
02ZJ003	SHOAL HARBOUR RIVER NEAR CLARENVILLE	1986	106	Q R C	
02YL004	SOUTH BROOK AT PASADENA	1983	58.5	Q R C	
02ZM021	SOUTH BROOK AT PEARL TOWN ROAD	1986	9.21	Q R C	
02ZM016	SOUTH RIVER NEAR HOLYROOD	1983	17.3	Q R C	
02YM003	SOUTH WEST BROOK NEAR BAIE VERTE	1980	93.2	Q R C	
02ZN002	ST. SHOTTS RIVER NEAR TREPASSEY	1985	15.5	Q R C	DCP
02ZK005	TROUT BROOK NEAR BELLEVUE	1986	50.3	Q R C	
02ZM019	VIRGINIA RIVER AT CARTWRIGHT PLACE	1985	5.55	Q R C	
02ZM010	WATERFORD RIVER AT MOUNT PEARL	1981	16.6	Q R C	

STA. NO.	STATION NAME	ESTAB.	D.A.	AGENCY	REMARKS
03OA001	ASHUANIPI RIVER AT MENIHEK RAPIDS	1952	19000	IOCCL	REG RMT
03OC006	ATIKONAK RIVER AT GABBRO LAKE	1973	21400	CFLCO	REG73 RMT
03OD006	ATIKONAK RIVER AT OSSAKMANUAN LAKE CONTROL STRUCTURE	1977		CFLCO	REG64 RMT
03OD005	CHURCHILL RIVER AT CHURCHILL FALLS POWERHOUSE	1972	69200	CFLCO	REG71 RMT
02YL002	CORNER BROOK AT WATSONS BROOK POWERHOUSE	1959	127	BOPCL	REG
02YO001	EXPLOITS RIVER AT GRAND FALLS	1928	8460	PPPCL	REG
02YK006	HINDS BROOK AT HINDS BROOK POWERHOUSE	1981	651	N&LHY	REG81
02YK001	HUMBER RIVER AT GRAND LAKE OUTLET	1898	5020	BOPCL	REG
02ZM003	MOBILE RIVER AT MOBILE FIRST POND	1962	112	NLPCL	REG
02ZM001	PETTY HARBOUR RIVER AT SECOND POND	1962	134	NLPCL	REG
02ZM002	PIERRES BROOK AT GULL POND	1962	117	NLPCL	REG
02YO003	RATTLING BROOK AT RATTLING BROOK POWERHOUSE	1962	378	NLPCL	REG
02ZE003	SALMON RIVER AT BAY D'ESPOIR POWERHOUSE	1967	5910	N&LHY	REG67
02YO004	SANDY BROOK AT SANDY BROOK POWERHOUSE	1964	508	NLPCL	REG

EXPLANATION OF SYMBOLS & ABBREVIATIONS

TYPE OF RECORD

H _ water level data

Q - flow data

TYPE OF GAUGE

M - manual gauge

R - automatic recording gauge

OPERATION SCHEDULE

C - continuous record

M - miscellaneous record

S - seasonal record

REMARKS

DCP - data collection platform

LRTAP - samples collected for acid precipitation monitoring

MET - data available from meteorological sensors

REG - regulated flow

REG78 - regulated flow since 1978

RMT - remote station accessed by aircraft

SED - sediment data currently being collected

TYP - typical stream; data used to produce statement on runoff conditions

WQ - samples collected for water quality natinal overview network

APPENDIX III

NATIONAL GUIDELINES FOR DESIGNATION

WATER QUANTITY SURVEY STATIONS

October 20, 1982

NATIONAL GUIDELINES FOR DESIGNATING WATER QUANTITY SURVEY STATIONS

These national guidelines of the Federal-Provincial Memoranda of Agreement for Water Quantity Surveys have been prepared by Canada in consultation with the Provinces for the purpose of designating federal, federal-provincial and provincial water quantity survey stations. In compliance with the agreements, the assignment and review of station designations is the responsibility of each Co-ordinating Committee.

The intent of these guidelines is to provide a uniform and consistent manner for designating water quantity survey stations throughout Canada. In these guidelines, "water quantity survey stations" have the same definition as in the Memoranda of Agreement and include water level, streamflow and sediment survey stations. The word "station" in these guidelines means "water quantity survey stations". Where not otherwise specified the word "Province" means "Province" or "Territory". The designation of each sediment station can be considered separately from the corresponding water quantity survey station designation.

FEDERAL STATIONS

There are stations that support programs of primary interest to the Government of Canada. These stations are funded 100 per cent by Canada in accordance with Article II and the procedures described in Schedules B, C, and D (F for the Yukon) (and Schedules E,D, and F for Quebec) of the Memoranda of Agreement.

1. Federal Department Programs

   These are stations required under statutory obligations that have developed in response to federal legislation and priorities, and as a result of programs of various federal government departments or agencies to provide quantity information on inland waters. These include stations operated in support of specific federal works, benchmark basins, studies or investigations, research projects, and to meet navigational requirements and management responsibilities. A station may be so designated where Canada has formally accepted responsibility for the continued operation of the station under an implementation agreement.

2. Interprovincial Rivers

   These are stations required for monitoring of waters flowing across or forming part of provincial or territorial boundaries where federal responsibility has been established by an agreement or where justified by an inter-jurisdictional concern.

3. International Waters

   These are stations associated with federal responsibilities arising from international agreements, treaties, orders or studies. These include:

   a) Stations specifically named under the Boundary Waters Treaty and those approved officially as "International Gauging Stations".

b) Stations specifically stipulated under IJC orders, or required to support such orders; to provide for control of waters crossing or forming part of the international boundary and for IJC related study, surveillance, flow regulation or appointment purposes. Such stations may also be required for similar studies carried out under unilateral or bilateral mechanisms and undertaken in anticipation of the need for formal orders.

c) Stations related to international treaties and agreements which involve waters crossing or forming part of the international boundary and which specifically stipulate the reaches of streams required to be monitored or special arrangements that need to be made to meet water quantity survey needs.

d) Stations on streams flowing across or forming part of the international boundary for which Canada has determined that monitoring is required for water management purposes.

4. National Water Quantity Inventory

These are stations that provide information for a national inventory of surface waters. They consist of those stations required to determine water quantity trends in the major drainage basins in Canada that serve to provide an assessment of the total surface water resources and to measure significant discharge to the oceans.

FEDERAL-PROVINCIAL AND/OR FEDERAL-TERRITORIAL STATIONS

These are stations that support programs of joint interest to Canada and the Province. The construction and operation of these stations are funded in accordance with Article III and procedures described in Schedules B, C, and D (F for the Yukon) (and Schedules E, D and F for Quebec) of the Memoranda of Agreement.

1. Federal-Provincial Agreement

These are stations where joint federal and provincial (or territorial) responsibility is established under the terms and conditions of an agreement between Canada and one or more Province or Territories.

The joint funding arrangements for any particular agreement must be taken into consideration before designating a station in order to ensure the intended division of financial responsibility. Following the completion of federal-provincial water study, a station may be designated in this category only if its continuation would be in the joint interest of Canada and the Province.

2. River Basin Management

These are stations where both Canada and the Province have stated an interest in the need for information to support the management of the water resources of a river basin.

3. Regional Water Quantity Inventory

These are stations that provide an assessment of the quantity of water resources available in distinct hydrologic zones within each Province through representative sampling taking into consideration climatic variability, geographic and geologic differences, levels of population and development, basin size, streamflow regime, relationship to major groundwater resources and length of record.

PROVINCIAL AND/OR TERRITORIAL STATIONS

These are stations that support programs of primary interest to a Province. They are funded 100 per cent by the Province in accordance with Article IV and procedures described in Schedules B, C, and D (F for the Yukon) (and Schedules E, D, and F for Quebec) of the Memoranda of Agreement.

1. Provincial Department Programs

   These are stations required strictly for provincial programs where water quantity information on inland waters is needed.

2. Specific Purpose Monitoring Requirements

   These are stations established as a result of specific requests of provincial/territorial agencies, municipalities, or non-government organizations. All such requests shall be referred to the Province for screening and funding arrangements before being presented to the applicable Co-ordinating Committee.

CRITERIA FOR DESIGNATING STATIONS

UNDER GUIDELINE FEDERAL 4

NATIONAL WATER QUANTITY INVENTORY

1. Stations established on the main stem of large rivers discharging directly to the oceans as defined in the Hydrologic Atlas of Canada as those whose mean annual flow at the outlet of the river basin exceeds 400 m^3/sec.

2. Stations established on rivers for the purpose of determining water quantity trends or those located on rivers contributing discharge to the oceans whose mean annual flow at the mouth of the river is at least 85 m^3/sec.

3. Stations established for the purpose defined above whose drainage areas are greater than 200 km^2.

4. Stations of drainage area less than 200 km^2 may be established on rivers to determine discharge to the ocean and/or to assess the total water resource available in major hydrologic and climatic zones which are defined as follows:

   Island Provinces - P.E.I. and Newfoundland,
   Islands forming integral parts of Provinces/Territories,
   Major Peninsulas
   Distinctly identified hydrologic and/or climatic zones.

   The density of such stations shall be limited to those determined by official scientifically conducted station network analysis as required to determine the desired hydrologic parameters of the major geographical zones within the Province, Territory or Region.

APPENDIX IV

SCHEDULE B

ANNUAL PAYMENTS - ITEMS TO BE INCLUDED

SCHEDULE B

ANNUAL PAYMENTS - ITEMS TO BE INCLUDED

The items to be included in computing the annual payments of water quantity survey stations are:

I. OPERATIONAL COSTS WATER QUANTITY SURVEY STATIONS EXCLUDING SEDIMENT

a) Salaries and overtime of field personnel and casual labour;

b) Field travel expenses, board and lodging costs for field personnel;

c) The computer costs associated with computing daily mean hydrometric data;

d) Observer pay;

e) Depreciation, operation and maintenance of vehicles and boats;

f) Maintenance of gauging station structures including material and labour for minor repairs;

g) Maintenance and depreciation of all field equipment and instruments (except as noted in Article VII of this agreement);

h) Fuels such as propane for heating recorder installations and gas such as nitrogen for operating pressure sensing equipment, electricity charges;

i) Rental of aircraft, vehicles, boats, etc., supplied by either party or chartered;

j) The annual cost of land leases;

k) Services, e.g. cost of establishing gas caches, operation of line cabins, etc.

II. OPERATIONAL COSTS SEDIMENT STATIONS

All items in I OPERATIONAL COST plus:

1) The computer costs associated with computing daily mean sediment data;

2) Cost of analysis of sediment samples.

SCHEDULE B (cont'd)

III. NEW CONSTRUCTION REPAIR AND MAJOR RECONSTRUCTION COSTS FOR WATER QUANTITY SURVEY STATONS:

a) Salaries and overtime of construction personnel;

b) Field travel expenses, board and lodging costs of construction personnel;

c) Depreciation, operation and maintenance of vehicles;

d) Construction materials;

e) Maintenance, depreciation and operation of construction equipment;

f) Rental of aircraft, vehicles, boats, construction equipment, etc. supplied by either party or chartered;

g) Land acquisition costs including legal survey costs;

h) Construction contract payments.

APPENDIX V

PROCEDURE FOR

APPLICATION OF SCHEDULE B TO THE

ATLANTIC REGION AGREEMENTS

PROCEDURE FOR

APPLICATION OF SCHEDULE B TO THE

ATLANTIC REGION AGREEMENTS

The procedures used by Water Resources Branch, Atlantic Region, to determine operational costs under the Water Quantity Surveys Cost Sharing Agreements are based on the financial system called AFMAS. Under this system, costs are divided into various object groups (01 to 25) and coded accordingly, by province.

SCHEDULE B

I. OPERATIONAL COSTS - WATER QUANTITY SURVEY STATIONS EXCLUDING SEDIMENT

Objective Groups 01, 02, 03 - Salaries and Overtime

This includes salaries and overtime payments of field technicians and supervisors.

Object Group 04 - Travel

This group of costs includes field travel expenses for field personnel and other employees required for hydrometric survey work in the respective province.

Object Group 06 - Transportation

Included under this object group are costs for the transportation of goods and materials by truck, air, rail, and water.

Object Group 07 - Telecommunications

Expenses included within group are telephone services directly related to hydrometric operations.

Object Group 08 - Telecommunications

This group includes message and data services directly related to the hydrometric survey, excluding data processing costs which are considered separately below.

Object Group 11 - Professional Services

This object group includes salaries of gauge readers at hydrometric stations.

Object Group 15 - Other Services

This group includes costs associated with graphic services, short term employment, photographic services, brokerage fees, storage, printing, and department of Supply and Services service charges.

Object Group 16 - Rentals

(i) Includes rentals of aircraft, vehicles, boats and light machinery used for maintenance of gauging facilities.

(II) Annual cost of land leases for the establishment of or access to gauging stations (includes recorder shelters and cableways).

Object Group 17 - Repairs to Equipment

Repair and upkeep of such items as road motor vehicles, instrumentation, electrical equipment, survey equipment, snowmobiles, motor boats, ATV's, trailers, etc.

Object Group 18 - Building and Structure Repairs

This object group deals with all work done under contract toward the repair and upkeep of gauging facilities including shelter, stilling wells, cableways, weirs, flumes, bridges, stairways, access roads, etc.

Object Group 19 - Public Utility Services

Electrical services obtained through a public utility company.

Object Group 20 - Purchased Materials

Gasoline and oil for road motor vehicles is the major cost item in this cost group. Other costs include gas and oil for other motorized equipment, building materials, nitrogen for manometer stations, propane, working clothes and footwear, recorder charts, etc.

Object Group 21 - Parts and Consumable Tools

Includes items such as plumbing equipment and fittings, electrical equipment and fittings, batteries, scientific equipment, heating equipment, measuring equipment, safety equipment, hand tools, boats, rubber tires, etc.

Data Processing Costs

Up to and including 1983-84, all data processing was done using the main frame computer facilities located at Bedford Institute of Oceanography. For 1983-84 the data processing cost amounted to $25,000.

During 1983-84, a PDP 11/44 mini computer system was installed at the offices of Water Resources Branch, Dartmouth. For 1984-85 the new facility was completely operational.

In accordance with "Compendium of Practices, Interpretations and Administrative Procedures used by Co-ordinating Committee in Implementing the Water Quantity Survey Agreements", the annual computing cost would include the capital expenditure for the mini computer system, the annual operating cost (AOC) and the annual maintenance cost (AMC). The capital is recovered over a ten year period through an imputed rental charge (IRC), determined by amortizing the capital expenditure over a period of ten years. Therefore, the evolving formula would be:

Total Shareable Annual Computing Cost = IRC + AOC + AMC

If the Total Shareable Annual Computing Cost exceeds the cost for the base year, 1983-84, multiplied by the annual national cost increase factors, then the latter cost will be used. This has been the case for the years 1984-85 to 1989-90, therefore, the base year cost updated by the national cost increase factors, has been used.

In the Atlantic Region the Total Shareable Annual Computing Cost is proportioned among the four cost sharing agreements by the number of gauging station records processed.

Depreciation of Vehicles

Road motor vehicles in the Atlantic Region are now depreciated in accordance to the "Compendium of Practices, Interpretations and Administrative Procedures Used by Co-ordinating Committees in Implementing the Water Quantity Survey Agreements". By this compendium Report the Multi-Purpose Vehicles, Vans and trucks used in the Atlantic Region are depreciated over a term of six years from the original capital purchase cost.

To calculate this depreciation, the actual capital cost of the vehicle is divided by 72 months to give a monthly depreciation. The monthly depreciation is multiplied by the actual number of months that a vehicle served in a particular province, to give the annual depreciation for the vehicle.

Depreciation of Field Equipment and Instrumentation

Field equipment and instrumentation are depreciated at a rate of 10% of the current value of the cost-shareable inventory as determined once a year. Normally, only items acquired through capital purchases are included on the cost-shareable inventory.

II. THE OPERATIONAL COST OF SEDIMENT STATIONS

All cost items included in Section I except salaries, overtime and depreciation of vehicles, as they relate to Sediment Surveys, are included in the operational costs for the Sediment Network. Also included is the cost of laboratory analysis for suspended concentration and particle size distribution.

III. CONSTRUCTION AND MAJOR REPAIR COSTS FOR WATER QUANTITY SURVEY STATIONS

Once a major repair or new construction project has been identified, it is assigned a cost code to which all related costs are assigned. Some of this work is contracted out with the initial reconnaissance and the general supervision on-site provided by Water Survey of Canada.

If contracted out, the total cost is comprised of:

- Overtime of Water Survey of Canada supervisory personnel.
- Field travel expenses, board and lodging costs of supervisory personnel provided by Water Survey of Canada.
- If a pressure installation, the cost of the manometer and pressure unit accessory equipment such as gas and cylinders. The water level recorder is not charged.

- Charter aircraft.

- Land acquisition costs if any.

- Construction contract payments.

  Department of Supply and Services contract procedures are followed.

<u>If constructed</u> by Water Survey of Canada personnel, costs include:

- Overtime of Water Survey of Canada supervisory personnel.

- Field travel expenses, board and lodging costs of Water Survey of Canada staff. Expenses associated with reconnaissance and construction.

- If a pressure installation, the cost of the pressure unit and accessory equipment such as gas and cylinders.

- Construction materials - All items required for the construction of stilling wells, shelters, cableways, controls and survival shelters.

- Rental of aircraft, vehicles, boats, construction equipment associated with the project.

- Land acquisition costs if required.

- Construction contract payments - The services of construction equipment operators for backhoe and bulldozer are usually involved.

SCHEDULE C

PROCEDURES FOR PREPARATION OF ANNUAL PAYMENTS

SCHEDULE C

PROCEDURES FOR PREPARATION OF ANNUAL PAYMENTS

a) The annual payment is composed of two parts, the annual operating costs and the costs of construction for streamflow and water level installations and sediment installations.

b) The annual payment shall be computed for each year the agreement is in effect.

c) Cost data to be used as a basis for computing each annual payment will be the cost data from the latest available full fiscal year.

d) A cost index factor is to be used in computing the annual payment for the year in question commensurate with sound engineering practice.

e) The average annual unit costs for operating water quantity survey stations listed in Schedule A but not including sediment stations will be determined from the cost data of c) above and where necessary, because of significant differences in transportation costs, these average annual unit costs will be computed for more than one area or condition of operation.

f) The total annual operation cost of the water quantity survey stations listed in Schedule A but not including sediment stations will be the summation of the appropriate average annual unit cost for each station multiplied by the cost index factor as determined in item d) above.

g) The total annual operation cost of the sediment stations listed in Schedule A will be the summation of the annual operating cost for each station multiplied by the cost index factor as determined in item d) above.

h) The construction cost to be apportioned in accordance with Articles II, III and IV will be the summation of the construction cost for each new, or reconstructed water quantity survey station. The entire cost of construction is to be included in the annual payment. Construction costs are to be determined using data from reconnaissance surveys, standard plans, etc. and incorporating the cost index factor from item d) above.

i) In cases where there is a significant deviation between the cost determined in (f), (g) and (h) and actual costs because of the cost index factor used, or changes in the construction program due to unforseen circumstances such as flooding, an adjustment may be made in the final quarterly payment (March 1st) or the next fiscal year to more accurately reflect the cost shares of the parties to this agreement.

APPENDIX VII

SCHEDULE D

SUMMARY OF ANNUAL PAYMENT

SCHEDULE D

This schedule provides a summary of the annual payment. The details of the calculations for operation and construction are available and have been jointly reviewed by officers of each party.

ANNUAL PAYMENT FOR 1989-90 TO BE PAID TO THE RECEIVER GENERAL FOR CANADA BY THE PROVINCE OF NEWFOUNDLAND.

	Operation	Construction	Total
a) Streamflow and water level installations	$253,392	$30,000	$283,392
b) Sediment installations	5,175	--	5,175
c) Data collection platform installations	11,678	--	11,678
		ANNUAL PAYMENT	$300,245

D. G. Deans
Assistant Deputy Minister
Department of Environment

Administrator for Province

S. L. Fenety
Director, Atlantic Region
Inland Waters/Lands

Administrator for Canada

APPENDIX VIII

MINUTES OF COORDINATING COMMITTEE MEETING

NOTE:

No annual co-ordinating committee was held during 1989-90. Following a post ponesent of the meeting slated for March 1990 due to the concerns over the significant increases in technicians' salaries, a agreement was reached on the Schedules "A" and "D" for 1990-91 via telephone communications, thus eliminating the necessity for a formal meeting.

APPENDIX IX

ESTIMATED COSTS FOR 1990-91

WATER QUANTITY SURVEYS

PROVINCE OF NEWFOUNDLAND

ISLAND - 1990-91

ESTIMATED OPERATIONAL COSTS FOR HYDROMETRIC SURVEYS

Personnel - Basic Pay - 01, 02, 03 (Salaries of hydrometric technical staff including overtime)	$254,100
Transportation and Communication	
Travel and Removal - 04	23,000
Transportation and Postage - 06	2,000
Telecommunications - 07	NIL
Professional and Special Services	
Professional Services - 11	1,200
Other Services - 15	6,000
Rentals	
Rentals - 16	43,000
Purchased Repair and Upkeep	
Equipment Purchased and Repairs - 17	5,000
Building and Structures Repairs - 18	1,000
Utilities, Materials and Supplies	
Public Utility Services - 19	2,000
Purchased Materials - 20	20,000
Parts and Consumable Tools - 21	10,000
Other Costs - Data Processing Costs	10,200
- Depreciation of Vehicles (6)	15,500
- Depreciation of Field Equipment and Instruments	12,000
TOTAL	$405,000

WATER QUANTITY SURVEYS

PROVINCE OF NEWFOUNDLAND

LABRADOR - 1990-91

ESTIMATED OPERATIONAL COSTS FOR HYDROMETRIC SURVEYS

Personnel - Basic Pay - 01, 02, 03 (Salaries of hydrometric technical staff including overtime)	$48,100
Transportation and Communication	
Travel and Removal - 04	$12,000
Transportation and Postage - 06	2,000
Telecommunications - 07	NIL
Professional and Special Services	
Professional Services - 11	NIL
Other Purchased Services - 15	2,000
Rentals	
Rentals - 16	53,000
Purchased Repair and Upkeep	
Equipment Purchased and Repairs - 17	500
Building and Structures Repairs - 18	NIL
Utilities, Materials and Supplies	
Public Utility Services - 19	NIL
Purchased Materials - 20	2,000
Parts and Consumable Tools - 21	1,000
Other Costs - Data Processing Costs	1,500
- Depreciation of Field Equipment and Instruments	2,000
TOTAL	$124,100

WATER QUANTITY SURVEYS

PROVINCE OF NEWFOUNDLAND

1990-91

ESTIMATED OPERATIONAL COSTS FOR SEDIMENT SURVEYS

Personnel - Basic Pay - 01, 02, 03		$ NIL
Transportation and Communication		
Travel and Removal - 04		$ 500
Transportation and Postage - 06		500
Telecommunications - 07		NIL
Professional and Special Services		
Professional Services - 11		1,000
Other Purchased Services - 15		100
Rentals		
Rentals - 16		NIL
Purchased Repair and Upkeep		
Equipment Purchased and Repairs - 17		200
Building and Structures Repairs - 18		NIL
Utilities, Materials and Supplies		
Public Utility Services - 19		NIL
Purchased Materials - 20		500
Parts and Consumable Tools - 21		100
Other Costs - Sample Analysis		4,000
- Depreciation of Field Equipment and Instruments		1,000
	TOTAL	$7,900

WATER QUANTITY SURVEYS

CANADA-NEWFOUNDLAND COST SHARING AGREEMENT

1990-91 ESTIMATED PROVINCIAL COST

HYDROMETRIC

ISLAND

Station Classification	Stations	Station Units
F1	6	6.0
F4	11	11.0
FP3	40	40.0
P1	28	25.6
TOTAL	85	82.6

Average Cost/Station Unit = $405,000/82.6 = $4903
Provincial Share = $4,903 (40.0/2) + 4,903 (25.6) =$223,577

LABRADOR

Station Classification	Stations	Station Units
F2	2	2.0
F4	4	4.0
FP3	3	3.0
P1	4	1.7
TOTAL	13	10.7

Average Cost/Station = $124,100/10.7 = $11,598
Provincial Share = $11,598 (3.0/2) + 11,598 (1.7) = $37,114

SEDIMENT

Station Classification	Stations
FP	2
P	2
TOTAL	4

Average Cost/Station = $7,900/4 = $1,975
Provincial Share = $1,975 (2/2) + $1,975 (2) = $5,925

TOTAL PROVINCIAL SHARE;

Hydrometric (Island)	- $223,577
Hydrometric (Labrador)	- 37,114
Sediment	- 5,925
Data Collection Platforms	- 11,678
TOTAL	$278,294